



Serial No.: 10/611,692

PU030182

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Inventor : Neal Kenneth Jacobs et al.
Serial No. : 10/611,692
Filed : July 1, 2003
Title : LIGHT PIPE FOR BACK LIGHTING A KEYPAD OF A
REMOTE CONTROL
Examiner : Jason Han
Art Unit : 2875

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APPELLANTS' BRIEF UNDER 37 C. F. R. § 1.192

On July 17, 2006, Appellants' filed a timely Notice of Appeal (that was received in the United States Patent and Trademark Office on July 17, 2006) from the action of the Examiner finally rejecting pending claims 1-20. The Appellants' herein file this Brief in accordance with 37 C. F. R. § 1.192.

1. IDENTIFICATION OF THE REAL PARTY IN INTEREST

The real party in interest for the above-identified application is Thomson Licensing S. A., which is the assignee of record for this application.

2. IDENTIFICATION OF RELATED APPEALS OR INTERFERENCES

To the best of the Appellants' knowledge, there are no appeals or interferences that will be directly affected by, or will have a bearing on the decision of this appeal.

3. STATUS OF THE CLAIMS

Claims 1-20 are rejected and the rejection of claims 1-20 is appealed.

The above-identified application was filed on July 1, 2003. Claims 1-20 were pending.

A first Office Action was mailed August 17, 2004 (Paper No. 20040812), in which claims 1-20 were rejected.

In Appellant's response to the first Office Action, dated February 14, 2005, no claims were amended.

The Examiner in a second Office Action, mailed June 1, 2005 (Paper No. 20050527), claims 1-20 were rejected.

In Appellant's response to the second Office Action, dated November 30, 2005, no claims were amended.

The Examiner in a third Office Action, mailed May 15, 2006 (Paper No. 20060213), finally rejected claims 1-20.

The status of the claims is as follows:

Original claims 1-20.

4. STATUS OF THE AMENDMENTS

No amendments were made after final rejection. All amendments were entered.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claim 1 is directed to a remote control 1 including a housing 2, 6, a circuit board 5, a keypad 4 and a light pipe 3. See Appellants' specification at FIG. 1 and page 3, lines 2-4. The housing includes a top cover 2 with a plurality of apertures 20 and a bottom cover 6. See Appellants' specification at FIG. 1 and page 3, lines 2-3. The circuit board 5 includes at least one surface mounted light emitting diode 14. See Appellants' specification at FIG. 1 and page 3, lines 6-8. The keypad 4 has a base 12 positioned on the circuit board 5 with a plurality of buttons 9 extending away from the circuit board 5 and at least one slot 15 corresponding to the at least one surface mounted light emitting diode 14. See Appellants' specification at FIGS. 1 and 4 and page 3, lines 12-19. The light pipe 3 is positioned on a top surface 12 of the keypad 4 between the top cover 2 of the housing and the keypad 4 so light is dispersed through the light pipe 3 to the plurality of buttons 9. See Appellants' specification at FIG. 1 and page 3, line 21 to page 4, line 9.

Dependent claim 5 is directed to a remote control 1 including a housing 2, 6, a circuit board 5, a keypad 4 and a light pipe 3. See Appellants' specification at FIG. 1 and page 3, lines 2-4. The housing includes a top cover 2 with a plurality of apertures 20 and a bottom cover 6. See Appellants' specification at FIG. 1 and page 3, lines 2-3. The circuit board 5 includes at least one surface mounted light emitting diode 14. See Appellants' specification at FIG. 1 and page 3, lines 6-8. The keypad 4 has a base 12 positioned on the circuit board 5 with a plurality of buttons 9 extending away from the circuit board 5 and at least one slot 15 corresponding to the at least one surface mounted light emitting diode 14. See Appellants' specification at FIGS. 1 and 4 and page 3, lines 12-19. The light pipe 3 is positioned on a top surface 12 of the keypad 4 between the top cover 2 of the housing and the keypad 4 so light is dispersed through the light pipe 3 to the plurality of buttons 9. See Appellants' specification at FIG. 1 and page 3, line 21 to page 4, line 9. The top cover 2 includes dividers 10 extending from an inside

surface 21 of the top cover 2 toward the keypad 4 that are arranged to receive the buttons 9 therebetween. See Appellants' specification at FIG. 2 and page 4, lines 12-22.

Independent claim 12 is directed to a remote control 1 including a housing 2, 6, a circuit board 5, a keypad 4 and a light pipe 3. See Appellants' specification at FIG. 1 and page 3, lines 2-4. The circuit board 5 includes at least one surface mounted light emitting diode 14. See Appellants' specification at FIG. 1 and page 3, lines 6-8. The keypad 4 has a base 12 positioned on the circuit board 5 with a plurality of buttons 9 extending away from the circuit board 5 and at least one slot 15 corresponding to the at least one surface mounted light emitting diode 14. See Appellants' specification at FIGS. 1 and 4 and page 3, lines 12-19. The light pipe 3 includes openings 8 corresponding to the buttons 9 of the keypad 4 and is positioned on the keypad 4 such that the buttons 9 extend through the openings 8 therein and light is dispersed through the light pipe 3 to the buttons 9. See Appellants' specification at FIG. 1 and page 3, line 21 to page 4, line 9.

Dependent claim 13 is directed to a remote control 1 including a housing 2, 6, a circuit board 5, a keypad 4 and a light pipe 3. See Appellants' specification at FIG. 1 and page 3, lines 2-4. The circuit board 5 includes at least one surface mounted light emitting diode 14. See Appellants' specification at FIG. 1 and page 3, lines 6-8. The keypad 4 has a base 12 positioned on the circuit board 5 with a plurality of buttons 9 extending away from the circuit board 5 and at least one slot 15 corresponding to the at least one surface mounted light emitting diode 14. See Appellants' specification at FIGS. 1 and 4 and page 3, lines 12-19. The light pipe 3 includes openings 8 corresponding to the buttons 9 of the keypad 4 and is positioned on the keypad 4 such that the buttons 9 extend through the openings 8 therein and light is dispersed through the light pipe 3 to the buttons 9. See Appellants' specification at FIG. 1 and page 3, line 21 to page 4, line 9. The housing includes a top cover 2 having a plurality of apertures 20 corresponding to the buttons 9 and dividers 10 extending from an inside surface 21 of the top

cover 2 toward the keypad 4 that are arranged to receive the buttons 9 therebetween. See Appellants' specification at FIG. 2 and page 4, lines 12-22.

Dependent claim 18 is directed to a remote control 1 including a housing 2, 6, a circuit board 5, a keypad 4 and a light pipe 3. See Appellants' specification at FIG. 1 and page 3, lines 2-4. The circuit board 5 includes at least one surface mounted light emitting diode 14. See Appellants' specification at FIG. 1 and page 3, lines 6-8. The keypad 4 has a base 12 positioned on the circuit board 5 with a plurality of buttons 9 extending away from the circuit board 5 and at least one slot 15 corresponding to the at least one surface mounted light emitting diode 14. See Appellants' specification at FIGS. 1 and 4 and page 3, lines 12-19. The light pipe 3 is the same size as the keypad 4 and includes openings 8 corresponding to the buttons 9 of the keypad 4 and is positioned on the keypad 4 such that the buttons 9 extend through the openings 8 therein and light is dispersed through the light pipe 3 to the buttons 9. See Appellants' specification at FIG. 1 and page 3, line 21 to page 4, line 9.

Dependent claim 19 is directed to a remote control 1 including a housing 2, 6, a circuit board 5, a keypad 4 and a light pipe 3. See Appellants' specification at FIG. 1 and page 3, lines 2-4. The circuit board 5 includes at least one surface mounted light emitting diode 14. See Appellants' specification at FIG. 1 and page 3, lines 6-8. The keypad 4 has a base 12 positioned on the circuit board 5 with a plurality of buttons 9 extending away from the circuit board 5 and at least one slot 15 corresponding to the at least one surface mounted light emitting diode 14. See Appellants' specification at FIGS. 1 and 4 and page 3, lines 12-19. The light pipe 3 includes openings 8 corresponding to the buttons 9 of the keypad 4 and is positioned on the keypad 4 such that the buttons 9 extend through the openings 8 therein and light is dispersed through the light pipe 3 to the buttons 9. See Appellants' specification at FIG. 1 and page 3, line 21 to page 4, line 9. The buttons 9 include contacts 18 that correspond to conductive contacts 19 on the circuit board 5 such that when the buttons 9 are pushed toward the circuit board 5 the contacts 18 contact the conductive contacts 19 to make an electrical

connection. See Appellants' specification at FIGS. 1-4 and page 5, line 21 to page 6, line 4.

6. GROUNDS FOR REJECTION TO BE REVIEWED ON APPEAL

1. The Examiner has rejected claims 12, 17 and 20 as being anticipated under 35 U. S. C. § 102(b) by Kuzma (U. S. 5,130,897).
2. The Examiner has rejected claims 1-4 and 9-11 as being unpatentable under 35 U. S. C. § 103(a) over Kuzma (U. S. 5,130,897) in view of Park (U. S. 5,568,367).
3. The Examiner has rejected claims 5-8 as being unpatentable under 35 U. S. C. § 103(a) over Kuzma (U. S. 5,130,897) in view of Park (U. S. 5,568,367) and further in view of Kuhfus (U. S. 4,349,705).
4. The Examiner has rejected claims 13-16 as being unpatentable under 35 U. S. C. § 103(a) over Kuzma (U. S. 5,130,897) in view of Kuhfus (U. S. 4,349,705).
5. The Examiner has rejected claims 18 as being unpatentable under 35 U. S. C. § 103(a) over Kuzma (U. S. 5,130,897).
6. The Examiner has rejected claims 19 as being unpatentable under 35 U. S. C. § 103(a) over Kuzma (U. S. 5,130,897) in view of Park (U. S. 5,568,367).

7. ARGUMENT

1. Rejection of claims 12, 17 and 20 under 35 U. S. C. § 102(b) as anticipated by Kuzma (U. S. 5,130,897).

Claims 12, 17 and 20

Kuzma describes an illuminated telephone dial. See Kuzma at column 1, lines 5-7. The telephone dial includes a dial frame 10, a light guide 20, buttons 30, a membrane switch 40, a flexible wiring trace 50 and a circuit board 60. See Kuzma at FIG. 1 and column 3, lines 38-42. The circuit board 60 supports a pair of vertically mounted LEDs 400. See Kuzma at FIG. 1 and column 3, lines 47-48. The flexible wiring trace 50 is positioned on a top surface of the circuit board 60. See Kuzma at FIG. 1. The membrane switch 40 and buttons 30 may be combined in a single structure and is positioned on the flexible wiring trace 50. See Kuzma at FIG. 1 and column 4, lines 1-14. The light guide 20 has apertures 210 arranged therein to accommodate the buttons 30 above the membrane switch 40. See Kuzma at FIG. 1 and column 4, lines 30-61. The dial frame 10 is positioned above the light guide 20. See Kuzma at FIG. 1.

In Appellants' claims 12, 17 and 20 a remote control 1 including a housing 2, 6, a circuit board 5, a keypad 4 and a light pipe 3 is described. See Appellants' specification at FIG. 1 and page 3, lines 2-4. The circuit board 5 includes at least one surface mounted light emitting diode 14. See Appellants' specification at FIG. 1 and page 3, lines 6-8. The keypad 4 has a base 12 positioned on the circuit board 5 with a plurality of buttons 9 extending away from the circuit board 5 and at least one slot 15 corresponding to the at least one surface mounted light emitting diode 14. See Appellants' specification at FIGS. 1 and 4 and page 3, lines 12-19. The light pipe 3 includes openings 8 corresponding to the buttons 9 of the keypad 4 and is positioned on the keypad 4 such that the buttons 9 extend through the openings 8 therein and light is dispersed through the light pipe 3 to

the buttons 9. See Appellants' specification at FIG. 1 and page 3, line 21 to page 4, line 9.

Kuzma does not describe or suggest a remote control including a housing, a circuit board, a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons. Rather, Kuzma teaches an illuminated telephone dial including a dial frame, a light guide, buttons, a membrane switch, a flexible wiring trace and a circuit board, where the flexible wiring trace is positioned on a top surface of the circuit board instead of a keypad. Therefore, Appellants' claims 12, 17 and 20 are not anticipated by Kuzma. All claims argued within this section will stand or fall together.

2. Rejection of claims 1-4 and 9-11 under 35 U. S. C. § 103(a) as being unpatentable over Kuzma (U. S. 5,130,897) in view of Park (U. S. 5,568,367).

Claims 1-4 and 9-11

Kuzma describes an illuminated telephone dial. See Kuzma at column 1, lines 5-7. The telephone dial includes a dial frame 10, a light guide 20, buttons 30, a membrane switch 40, a flexible wiring trace 50 and a circuit board 60. See Kuzma at FIG. 1 and column 3, lines 38-42. The circuit board 60 supports a pair of vertically mounted LEDs 400. See Kuzma at FIG. 1 and column 3, lines 47-48. The flexible wiring trace 50 is positioned on a top surface of the circuit board 60. See Kuzma at FIG. 1. The membrane switch 40 and buttons 30 may be combined in a single structure and is positioned on the flexible wiring trace 50. See Kuzma at FIG. 1 and column 4, lines 1-14. The light guide 20 has apertures 210 arranged therein to accommodate the buttons 30 above the membrane switch 40. See Kuzma at FIG. 1 and column 4, lines 30-61. The dial frame 10 is positioned above the light guide 20. See Kuzma at FIG. 1.

In Appellants' claims 1-4 and 9-11 a remote control 1 including a housing 2, 6, a circuit board 5, a keypad 4 and a light pipe 3 is described. See Appellants' specification at FIG. 1 and page 3, lines 2-4. The housing includes a top cover 2 with a plurality of apertures 20 and a bottom cover 6. See Appellants' specification at FIG. 1 and page 3, lines 2-3. The circuit board 5 includes at least one surface mounted light emitting diode 14. See Appellants' specification at FIG. 1 and page 3, lines 6-8. The keypad 4 has a base 12 positioned on the circuit board 5 with a plurality of buttons 9 extending away from the circuit board 5 and at least one slot 15 corresponding to the at least one surface mounted light emitting diode 14. See Appellants' specification at FIGS. 1 and 4 and page 3, lines 12-19. The light pipe 3 is positioned on a top surface 12 of the keypad 4 between the top cover 2 of the housing and the keypad 4 so light is dispersed through the light pipe 3 to the plurality of buttons 9. See Appellants' specification at FIG. 1 and page 3, line 21 to page 4, line 9.

Kuzma does not describe or suggest a remote control including a housing, a circuit board, a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons. Rather, Kuzma teaches an illuminated telephone dial including a dial frame, a light guide, buttons, a membrane switch, a flexible wiring trace and a circuit board, where the flexible wiring trace is positioned on a top surface of the circuit board instead of a keypad. Therefore, Appellants' claims 1-4 and 9-11 are not rendered obvious by Kuzma.

Park describes a remote control with key lighting. See Park at column 1, lines 6-7. The remote control 8 includes a housing 12, 14, a circuit board, a spacer plate 28, a contact plate 30, a locating plate 40 and a transparent elastomeric plate 26. See Park at FIG. 4 and column 3, line 35 to column 4, line 34. The circuit board 20 includes a plurality of light emitting elements 21 as well as contacts 31. See Park at FIG. 4 and column 3, lines 45-60. The spacer plate 28 is positioned directly above the circuit board 20 and includes openings for the

light emitting elements 21 and the contacts 31. See Park at FIG. 4 and column 3, lines 58-59. The contact plate 30 positioned on the spacer includes openings above the light emitting elements 21 and is adapted to make contact with the contacts 31 on the circuit board 20. See Park at FIG. 4 and column 3, lines 58-62. The locating plate 40 with openings 41 above contacts 31 is positioned on the contact plate 30. See Park at FIG. 4 and column 4, lines 12-16. The transparent elastomeric plate 26 is seated on the locating plate 40 with push-buttons 52 extending downward through openings 41 to make contact plate 30 touch contacts 31. See Park at FIG. 4 and column 4, lines 26-57.

Park does not describe or suggest a remote control including a housing, a circuit board, a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons. Rather, Park teaches an arrangement in which a transparent elastomeric plate with push-buttons extending downward therefrom is seated in openings on a locating plate. Therefore, Appellants' claims 1-4 and 9-11 are not rendered obvious by Park.

Furthermore, since Kuzma only teaches an arrangement including an illuminated telephone dial including a dial frame, a light guide, buttons, a membrane switch, a flexible wiring trace and a circuit board, where the flexible wiring trace is positioned on a top surface of the circuit board instead of a keypad and Park teaches an arrangement in which a transparent elastomeric plate with push-buttons extending downward therefrom is seated in openings on a locating plate, the combination of these references does not describe or suggest appellants' arrangement recited in claims 1-4 and 9-11. In particular, claims 1-4 and 9-11 recite a remote control including a housing, a circuit board, a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons. Thus, claims 1-4 and 9-11 are patentable over the combination of these references. All claims argued within this section will stand or fall together.

3. Rejection of claims 5-8 under 35 U. S. C. § 103(a) as being unpatentable over Kuzma (U. S. 5,130,897) in view of Park (U. S. 5,568,367) and further in view of Kuhfus (U. S. 4,349,705).

Claims 5-8

Kuzma describes an illuminated telephone dial. See Kuzma at column 1, lines 5-7. The telephone dial includes a dial frame 10, a light guide 20, buttons 30, a membrane switch 40, a flexible wiring trace 50 and a circuit board 60. See Kuzma at FIG. 1 and column 3, lines 38-42. The circuit board 60 supports a pair of vertically mounted LEDs 400. See Kuzma at FIG. 1 and column 3, lines 47-48. The flexible wiring trace 50 is positioned on a top surface of the circuit board 60. See Kuzma at FIG. 1. The membrane switch 40 and buttons 30 may be combined in a single structure and is positioned on the flexible wiring trace 50. See Kuzma at FIG. 1 and column 4, lines 1-14. The light guide 20 has apertures 210 arranged therein to accommodate the buttons 30 above the membrane switch 40. See Kuzma at FIG. 1 and column 4, lines 30-61. The dial frame 10 is positioned above the light guide 20. See Kuzma at FIG. 1.

In Appellants' claims 5-8 a remote control 1 including a housing 2, 6, a circuit board 5, a keypad 4 and a light pipe 3 is described. See Appellants' specification at FIG. 1 and page 3, lines 2-4. The housing includes a top cover 2 with a plurality of apertures 20 and a bottom cover 6. See Appellants' specification at FIG. 1 and page 3, lines 2-3. The circuit board 5 includes at least one surface mounted light emitting diode 14. See Appellants' specification at FIG. 1 and page 3, lines 6-8. The keypad 4 has a base 12 positioned on the circuit board 5 with a plurality of buttons 9 extending away from the circuit board 5 and at least one slot 15 corresponding to the at least one surface mounted light emitting diode 14. See Appellants' specification at FIGS. 1 and 4 and page 3, lines 12-19. The light pipe 3 is positioned on a top surface 12 of the keypad 4 between the top cover 2 of the housing and the keypad 4 so light is dispersed

through the light pipe 3 to the plurality of buttons 9. See Appellants' specification at FIG. 1 and page 3, line 21 to page 4, line 9. The top cover 2 includes dividers 10 extending from an inside surface 21 of the top cover 2 toward the keypad 4 that are arranged to receive the buttons 9 therebetween. See Appellants' specification at FIG. 2 and page 4, lines 12-22.

Kuzma does not describe or suggest a remote control including a housing having dividers, a circuit board, a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons. Rather, Kuzma teaches an illuminated telephone dial including a dial frame, a light guide, buttons, a membrane switch, a flexible wiring trace and a circuit board, where the flexible wiring trace is positioned on a top surface of the circuit board instead of a keypad. Therefore, Appellants' claims 5-8 are not rendered obvious by Kuzma.

Park describes a remote control with key lighting. See Park at column 1, lines 6-7. The remote control 8 includes a housing 12, 14, a circuit board, a spacer plate 28, a contact plate 30, a locating plate 40 and a transparent elastomeric plate 26. See Park at FIG. 4 and column 3, line 35 to column 4, line 34. The circuit board 20 includes a plurality of light emitting elements 21 as well as contacts 31. See Park at FIG. 4 and column 3, lines 45-60. The spacer plate 28 is positioned directly above the circuit board 20 and includes openings for the light emitting elements 21 and the contacts 31. See Park at FIG. 4 and column 3, lines 58-59. The contact plate 30 positioned on the spacer includes openings above the light emitting elements 21 and is adapted to make contact with the contacts 31 on the circuit board 20. See Park at FIG. 4 and column 3, lines 58-62. The locating plate 40 with openings 41 above contacts 31 is positioned on the contact plate 30. See Park at FIG. 4 and column 4, lines 12-16. The transparent elastomeric plate 26 is seated on the locating plate 40 with push-buttons 52 extending downward through openings 41 to make contact plate 30 touch contacts 31. See Park at FIG. 4 and column 4, lines 26-57.

Park does not describe or suggest a remote control including a housing having dividers, a circuit board, a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons. Rather, Park teaches an arrangement in which a transparent elastomeric plate with push-buttons extending downward therefrom is seated in openings on a locating plate. Therefore, Appellants' claims 5-8 are not rendered obvious by Park.

Kuhfus describes a lighted telephone dial. See Kuhfus at column 1, lines 4-5. In Kuhfus, a light guide plate 25 is positioned on an LED frame 62 which is positioned on a pushbutton member 21. See Kuhfus at FIG. 1.

Kuhfus does not describe or suggest a remote control including a housing having dividers, a circuit board, a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons. Rather, Kuhfus teaches a completely different arrangement in which a light guide plate of a telephone dial is positioned on an LED frame which is positioned on a pushbutton member. Therefore, Appellants' claims 5-8 are not rendered obvious by Kuhfus.

Furthermore, since Kuzma only teaches an arrangement including an illuminated telephone dial including a dial frame, a light guide, buttons, a membrane switch, a flexible wiring trace and a circuit board, where the flexible wiring trace is positioned on a top surface of the circuit board instead of a keypad, Park teaches an arrangement in which a transparent elastomeric plate with push-buttons extending downward therefrom is seated in openings on a locating plate, and Kuhfus teaches a completely different arrangement in which a light guide plate of a telephone dial is positioned on an LED frame which is positioned on a pushbutton member, the combination of these references does not describe or suggest appellants' arrangement recited in claims 5-8. In particular, claims 5-8 recite a remote control including a housing, a circuit board,

a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons. Thus, claims 5-8 are patentable over the combination of these references. All claims argued within this section will stand or fall together.

4. Rejection of claims 13-16 under 35 U. S. C. § 103(a) as being unpatentable over Kuzma (U. S. 5,130,897) in view of Kuhfus (U. S. 4,349,705).

Claims 13-16

Kuzma describes an illuminated telephone dial. See Kuzma at column 1, lines 5-7. The telephone dial includes a dial frame 10, a light guide 20, buttons 30, a membrane switch 40, a flexible wiring trace 50 and a circuit board 60. See Kuzma at FIG. 1 and column 3, lines 38-42. The circuit board 60 supports a pair of vertically mounted LEDs 400. See Kuzma at FIG. 1 and column 3, lines 47-48. The flexible wiring trace 50 is positioned on a top surface of the circuit board 60. See Kuzma at FIG. 1. The membrane switch 40 and buttons 30 may be combined in a single structure and is positioned on the flexible wiring trace 50. See Kuzma at FIG. 1 and column 4, lines 1-14. The light guide 20 has apertures 210 arranged therein to accommodate the buttons 30 above the membrane switch 40. See Kuzma at FIG. 1 and column 4, lines 30-61. The dial frame 10 is positioned above the light guide 20. See Kuzma at FIG. 1.

In Appellants' claims 13-16 a remote control 1 including a housing 2, 6, a circuit board 5, a keypad 4 and a light pipe 3 is described. See Appellants' specification at FIG. 1 and page 3, lines 2-4. The circuit board 5 includes at least one surface mounted light emitting diode 14. See Appellants' specification at FIG. 1 and page 3, lines 6-8. The keypad 4 has a base 12 positioned on the circuit board 5 with a plurality of buttons 9 extending away from the circuit board 5 and

at least one slot 15 corresponding to the at least one surface mounted light emitting diode 14. See Appellants' specification at FIGS. 1 and 4 and page 3, lines 12-19. The light pipe 3 includes openings 8 corresponding to the buttons 9 of the keypad 4 and is positioned on the keypad 4 such that the buttons 9 extend through the openings 8 therein and light is dispersed through the light pipe 3 to the buttons 9. See Appellants' specification at FIG. 1 and page 3, line 21 to page 4, line 9. The housing includes a top cover 2 having a plurality of apertures 20 corresponding to the buttons 9 and dividers 10 extending from an inside surface 21 of the top cover 2 toward the keypad 4 that are arranged to receive the buttons 9 therebetween. See Appellants' specification at FIG. 2 and page 4, lines 12-22.

Kuzma does not describe or suggest a remote control including a housing having dividers, a circuit board, a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons. Rather, Kuzma teaches an illuminated telephone dial including a dial frame, a light guide, buttons, a membrane switch, a flexible wiring trace and a circuit board, where the flexible wiring trace is positioned on a top surface of the circuit board instead of a keypad. Therefore, Appellants' claims 13-16 are not rendered obvious by Kuzma.

Kuhfus describes a lighted telephone dial. See Kuhfus at column 1, lines 4-5. In Kuhfus, a light guide plate 25 is positioned on an LED frame 62 which is positioned on a pushbutton member 21. See Kuhfus at FIG. 1.

Kuhfus does not describe or suggest a remote control including a housing having dividers, a circuit board, a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons. Rather, Kuhfus teaches a completely different arrangement in which a light guide plate of a telephone dial is positioned on an LED frame which is

positioned on a pushbutton member. Therefore, Appellants' claims 13-16 are not rendered obvious by Kuhfus.

Furthermore, since Kuzma only teaches an arrangement including an illuminated telephone dial including a dial frame, a light guide, buttons, a membrane switch, a flexible wiring trace and a circuit board, where the flexible wiring trace is positioned on a top surface of the circuit board instead of a keypad and Kuhfus teaches a completely different arrangement in which a light guide plate of a telephone dial is positioned on an LED frame which is positioned on a pushbutton member, the combination of these references does not describe or suggest appellants' arrangement recited in claims 13-16. In particular, claims 13-16 recite a remote control including a housing, a circuit board, a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons. Thus, claims 13-16 are patentable over the combination of these references. All claims argued within this section will stand or fall together.

5. Rejection of claim 18 under 35 U. S. C. § 103(a) as unpatentable over Kuzma (U. S. 5,130,897).

Claim 18

Kuzma describes an illuminated telephone dial. See Kuzma at column 1, lines 5-7. The telephone dial includes a dial frame 10, a light guide 20, buttons 30, a membrane switch 40, a flexible wiring trace 50 and a circuit board 60. See Kuzma at FIG. 1 and column 3, lines 38-42. The circuit board 60 supports a pair of vertically mounted LEDs 400. See Kuzma at FIG. 1 and column 3, lines 47-48. The flexible wiring trace 50 is positioned on a top surface of the circuit board 60. See Kuzma at FIG. 1. The membrane switch 40 and buttons 30 may be combined in a single structure and is positioned on the flexible wiring trace 50.

See Kuzma at FIG. 1 and column 4, lines 1-14. The light guide 20 has apertures 210 arranged therein to accommodate the buttons 30 above the membrane switch 40. See Kuzma at FIG. 1 and column 4, lines 30-61. The dial frame 10 is positioned above the light guide 20. See Kuzma at FIG. 1.

In Appellants' claim 18 a remote control 1 including a housing 2, 6, a circuit board 5, a keypad 4 and a light pipe 3 is described. See Appellants' specification at FIG. 1 and page 3, lines 2-4. The circuit board 5 includes at least one surface mounted light emitting diode 14. See Appellants' specification at FIG. 1 and page 3, lines 6-8. The keypad 4 has a base 12 positioned on the circuit board 5 with a plurality of buttons 9 extending away from the circuit board 5 and at least one slot 15 corresponding to the at least one surface mounted light emitting diode 14. See Appellants' specification at FIGS. 1 and 4 and page 3, lines 12-19. The light pipe 3 is the same size as the keypad 4 and includes openings 8 corresponding to the buttons 9 of the keypad 4 and is positioned on the keypad 4 such that the buttons 9 extend through the openings 8 therein and light is dispersed through the light pipe 3 to the buttons 9. See Appellants' specification at FIG. 1 and page 3, line 21 to page 4, line 9.

Kuzma does not describe or suggest a remote control including a housing, a circuit board, a keypad and a light pipe where the keypad is the same size as the light pipe and has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons. Rather, Kuzma teaches an illuminated telephone dial including a dial frame, a light guide, buttons, a membrane switch, a flexible wiring trace and a circuit board, where the flexible wiring trace is positioned on a top surface of the circuit board instead of a keypad. Therefore, Appellants' claim 18 is not rendered obvious by Kuzma.

6. Rejection of claim 19 under 35 U. S. C. § 103(a) as being unpatentable over Kuzma (U. S. 5,130,897) in view of Park (U. S. 5,568,367).

Claim 19

Kuzma describes an illuminated telephone dial. See Kuzma at column 1, lines 5-7. The telephone dial includes a dial frame 10, a light guide 20, buttons 30, a membrane switch 40, a flexible wiring trace 50 and a circuit board 60. See Kuzma at FIG. 1 and column 3, lines 38-42. The circuit board 60 supports a pair of vertically mounted LEDs 400. See Kuzma at FIG. 1 and column 3, lines 47-48. The flexible wiring trace 50 is positioned on a top surface of the circuit board 60. See Kuzma at FIG. 1. The membrane switch 40 and buttons 30 may be combined in a single structure and is positioned on the flexible wiring trace 50. See Kuzma at FIG. 1 and column 4, lines 1-14. The light guide 20 has apertures 210 arranged therein to accommodate the buttons 30 above the membrane switch 40. See Kuzma at FIG. 1 and column 4, lines 30-61. The dial frame 10 is positioned above the light guide 20. See Kuzma at FIG. 1.

In Appellants' claim 19 a remote control 1 including a housing 2, 6, a circuit board 5, a keypad 4 and a light pipe 3 is described. See Appellants' specification at FIG. 1 and page 3, lines 2-4. The circuit board 5 includes at least one surface mounted light emitting diode 14. See Appellants' specification at FIG. 1 and page 3, lines 6-8. The keypad 4 has a base 12 positioned on the circuit board 5 with a plurality of buttons 9 extending away from the circuit board 5 and at least one slot 15 corresponding to the at least one surface mounted light emitting diode 14. See Appellants' specification at FIGS. 1 and 4 and page 3, lines 12-19. The light pipe 3 includes openings 8 corresponding to the buttons 9 of the keypad 4 and is positioned on the keypad 4 such that the buttons 9 extend through the openings 8 therein and light is dispersed through the light pipe 3 to the buttons 9. See Appellants' specification at FIG. 1 and page 3, line 21 to page 4, line 9. The buttons 9 include contacts 18 that correspond to conductive

contacts 19 on the circuit board 5 such that when the buttons 9 are pushed toward the circuit board 5 the contacts 18 contact the conductive contacts 19 to make an electrical connection. See Appellants' specification at FIGS. 1-4 and page 5, line 21 to page 6, line 4.

Kuzma does not describe or suggest a remote control including a housing, a circuit board, a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons, and wherein the buttons include contacts to make electrical connection with the circuit board. Rather, Kuzma teaches an illuminated telephone dial including a dial frame, a light guide, buttons, a membrane switch, a flexible wiring trace and a circuit board, where the flexible wiring trace is positioned on a top surface of the circuit board instead of a keypad. Therefore, Appellants' claim 19 is not rendered obvious by Kuzma.

Park describes a remote control with key lighting. See Park at column 1, lines 6-7. The remote control 8 includes a housing 12, 14, a circuit board, a spacer plate 28, a contact plate 30, a locating plate 40 and a transparent elastomeric plate 26. See Park at FIG. 4 and column 3, line 35 to column 4, line 34. The circuit board 20 includes a plurality of light emitting elements 21 as well as contacts 31. See Park at FIG. 4 and column 3, lines 45-60. The spacer plate 28 is positioned directly above the circuit board 20 and includes openings for the light emitting elements 21 and the contacts 31. See Park at FIG. 4 and column 3, lines 58-59. The contact plate 30 positioned on the spacer includes openings above the light emitting elements 21 and is adapted to make contact with the contacts 31 on the circuit board 20. See Park at FIG. 4 and column 3, lines 58-62. The locating plate 40 with openings 41 above contacts 31 is positioned on the contact plate 30. See Park at FIG. 4 and column 4, lines 12-16. The transparent elastomeric plate 26 is seated on the locating plate 40 with push-buttons 52 extending downward through openings 41 to make contact plate 30 touch contacts 31. See Park at FIG. 4 and column 4, lines 26-57.

Park does not describe or suggest a remote control including a housing, a circuit board, a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons, and wherein the buttons include contacts to make electrical connection with the circuit board. Rather, Park teaches an arrangement in which a transparent elastomeric plate with push-buttons extending downward therefrom is seated in openings on a locating plate. Therefore, Appellants' claim 19 is not rendered obvious by Park.

Furthermore, since Kuzma only teaches an arrangement including an illuminated telephone dial including a dial frame, a light guide, buttons, a membrane switch, a flexible wiring trace and a circuit board, where the flexible wiring trace is positioned on a top surface of the circuit board instead of a keypad and Park teaches an arrangement in which a transparent elastomeric plate with push-buttons extending downward therefrom is seated in openings on a locating plate, the combination of these references does not describe or suggest appellants' arrangement recited in claim 19. In particular, claim 19 recites a remote control including a housing, a circuit board, a keypad and a light pipe where the keypad has a base that is positioned on a top surface of the circuit board and the light pipe is positioned on the keypad so light is dispersed through the light pipe to the buttons, and wherein the buttons include contacts to make electrical connection with the circuit board. Thus, claim 19 is patentable over the combination of these references.

8. CONCLUSION

In view of the above, Appellants' respectfully request that the Examiners' rejection of claims 1-20 be reversed. Favorable action is respectfully requested.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Patricia A. Verlangieri", written over a horizontal line.

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December 18, 2006

Attachments
Appendix A - Claims 1-20
Appendix B - Evidence
Appendix C - Related Proceedings



APPENDIX A - APPEALED CLAIMS

1. An electronic device remote control with back lighting, comprising:
 - a housing including a top cover having a plurality of apertures and a bottom cover;
 - a circuit board having a light emitting diode;
 - a keypad having a base with a plurality of buttons extending through the apertures of the top cover; and
 - a light pipe positioned on a top surface of the keypad between the top cover of the housing and the keypad so that light is dispersed through the light pipe to the buttons.
2. The remote control of claim 1, wherein the base of the keypad has at least one slot corresponding to the light emitting diode.
3. The remote control of claim 1, wherein the light emitting diode is surface mounted to the circuit board.
4. The remote control of claim 1, wherein the light pipe includes openings corresponding to the buttons of the keypad for receiving the buttons therein.
5. The remote control of claim 1, wherein the top cover includes dividers extending from an inside surface of the top cover toward the base of the keypad that are arranged to receive the buttons therebetween.
6. The remote control of claim 5, wherein the dividers contact the light pipe.
7. The remote control of claim 6, wherein the dividers contact the base of the keypad through cut-outs in the light pipe.

8. The remote control of claim 5, wherein the dividers contact the base of the keypad.
9. The remote control of claim 1, wherein the light pipe has at least one light dispersing slot corresponding to the at least one surface mounted light emitting diode.
10. The remote control of claim 1, wherein the buttons include contacts that correspond to conductive contacts on the circuit board such that when the buttons are pushed toward the circuit board, the contacts contact the conductive contacts to make an electrical connection.
11. The remote control of claim 1, wherein the light pipe is the same size as the keypad.
12. An electronic device remote control with back lighting, comprising:
 - a housing;
 - a circuit board having at least one surface mounted light emitting diode;
 - a keypad having a base positioned on a top surface of the circuit board, the base having a plurality of buttons extending away from the circuit board and at least one slot corresponding to the at least one surface mounted light emitting diode; and
 - a light pipe having openings corresponding to the buttons of the keypad, the light pipe being positioned on the keypad such that buttons extend through the openings therein so that light is dispersed through the light pipe to the buttons.
13. The remote control of claim 12, wherein the housing includes a top cover having a plurality of apertures corresponding to the buttons and dividers

extending from an inside surface of the top cover toward the base of the keypad that are arranged to receive the buttons therebetween.

14. The remote control of claim 13, wherein the dividers contact the light pipe.
15. The remote control of claim 14, wherein the dividers contact the base of the keypad through cut-outs in the light pipe.
16. The remote control of claim 13, wherein the dividers contact the keypad.
17. The remote control of claim 12, wherein the light emitting diodes are arranged along a longitudinal axis of the circuit board.
18. The remote control of claim 12, wherein the light pipe is the same size as the keypad.
19. The remote control of claim 12, wherein the buttons include contacts that correspond to conductive contacts on the circuit board such that when the buttons are pushed toward the circuit board, the contacts contact the conductive contacts to make an electrical connection.
20. The remote control of claim 12, wherein the light pipe has at least one light dispersing slot corresponding to the at least one surface mounted light emitting diode.

Serial No.:10/611,692

PU030182



Not applicable.

APPENDIX B - EVIDENCE

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APPENDIX C - RELATED PROCEEDINGS

Not applicable.